

WHAT IS CLAIMED IS:

1. A method for extracting material from a porous substrate comprising the steps of:

5 a) exposing the substrate to a supercritical fluid in which said material is substantially soluble but said substrate is not;

b) repeatedly modulating the pressure of said supercritical fluid between two or more pressure levels such that the relative difference between the  
10 uppermost and lowermost levels of density of said supercritical fluid at such pressure levels is not more than about 30%.

2. The method of claim 1 wherein said method is conducted at near-critical or supercritical conditions.

3. The method of claim 1 wherein said method is conducted at a  
15 temperature in the range of about 0.8 to about 2 times the critical temperature of the fluid in degrees Kelvin.

4. The method of claim 1 wherein the uppermost pressure level of said two or more pressure levels is within the range of about 0.5 to about 30 times the critical pressure of the supercritical fluid.

20 5. The method of claim 1 wherein the uppermost pressure level of said two or more pressure levels is within the range of about 1 to about 10 times the critical pressure of the supercritical fluid.

6. The method of claim 1 wherein said method is conducted at a temperature in the range of about 1 to about 1.1 times the critical temperature of the fluid in degrees Kelvin.

7. The method of claim 1 wherein said supercritical fluid is maintained  
5 at conditions such that the relative difference between the density level achieved at the uppermost pressure level and the lowermost pressure level of said two or more pressure levels is no more than about 5%.

8. The method of claim 1 wherein said pressure modulation is repeated multiple times.

10 9. The method of claim 1 wherein said pressure modulation is repeated at least 5 times.

10. The method of claim 1 wherein said pressure modulation is repeated at least 20 times.

11. The method of claim 1 wherein said pressure modulation is repeated  
15 at least 50 times.

12. The method of claim 1 wherein said pressure modulation is repeated until more than 50% of the material is removed from said substrate.

13. The method of claim 1 wherein said pressure modulation is repeated until more than 75% of the material is removed from said substrate.

14. The method according to claim 1 wherein the supercritical fluid is or contains carbon dioxide.

15. The method according to claim 1 wherein said substrate is sensitive to large changes in pressure, temperature or density.

16. The method according to claim 1, wherein said substrate is a porous matrix.

17. The method according to claim 1, wherein said substrate defines a porous structure selected from: powders, adsorbents and absorbents.